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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,173	10/16/2003	Jung-O Koo	1266-3 (KP-US-203)	7583

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EXAMINER	
QIN, JIANCHUN	
ART UNIT	**PAPER NUMBER**
2837	

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/687,173	KOO, JUNG-O	
	Examiner	Art Unit	
	Jianchun Qin	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-4,6-10 and 12-14* is/are rejected.

7)☐ Claim(s) *5 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. Specifically, the Abstract of the Disclosure is objected to because it contains informality legal phrases “comprises”. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niitsuma (U.S. Pat. No. 6087575) in view of Kimura (U.S. Pat. No. 6322875), Kato (U.S. Pat. No. 4491702).

Niitsuma et al. teach a method for manufacturing a keyboard, comprising the steps of: forming a top pad having a plurality of keys arranged on a top surface of the top pad (Fig. 1, #3a, #3b); forming a bottom pad having a shape corresponding to the bottom surface of the top pad and a width of the bottom pad being further increased (Fig. 1, #2; col. 7, lines 48-52); aligning the bottom pad and a flexible printed circuit board with electrical contact portions formed thereon and bonding corresponding edges of the top and bottoms pads to finish the keyboard (Fig. 8, #12; col. 12, lines 27-52).

Niitsuma et al. do not mention expressly: coloring gel-state silicon rubber by mixing pigments with the silicon rubber; rolling the colored silicon rubber into a plurality of sheets with a predetermined thickness; forming a top pad by press working the sheet such that a plurality of recesses are formed on a bottom surface thereof to correspond to the keys in view of their shapes and locations; forming a bottom pad by press working the sheet; painting surfaces of the keys through a silk-screen printing method; heating the painted top pad at a temperature of 180°C for 10 minutes and drying ink painted on

the top pad; aligning the bottom pad and a flexible printed circuit board with electrical contact portions formed thereon corresponding to the recesses with respect to the bottom surface of the top pad; and the top and bottom pads are bonded to each other using silicon liquid rubber as an adhesive.

Kimura teaches a method of manufacturing a key-top, including: coloring gel-state silicon rubber by mixing pigments with the silicon rubber (col. 1, lines 13-22 and col. 2, lines 48-56); rolling the colored silicon rubber into a plurality of sheets with a predetermined thickness (col. 2, lines 48-56); painting surfaces of the keys through a silk-screen printing method (col. 1, lines 13-22 and col. 2, lines 48-56); forming a top pad by press working the sheet such that a plurality of recesses are formed on a bottom surface thereof to correspond to the keys in view of their shapes and locations (Fig. 2; col. 2, lines 37-42); heating the painted top pad and drying ink painted on the top pad (col. 2, lines 17-24; col. 6, lines 25-31); and the top and bottom pads are bonded to each other using silicon liquid rubber as an adhesive (col. 2, lines 37-42).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Kimura in the invention of Niitsuma in order to manufacture a light weighted, flexible, durable and rainbow-colored decoration key top by using a less-expensive and robust method (Kimura, Abstract and col. 1, lines 53-60).

Kimura does not mention expressly that heating the painted top pad at a temperature of 180°C for 10 minutes. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select an

appropriate heating temperature and duration to heat and dry the painted top pad properly, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Kato teaches Key-top panel and keyboard structure using the panel, including: recesses that are formed on the bottom surface of a top pad to correspond to a plurality of keys and the contact portions of a flexible printed circuit board in view of their shapes and locations (col. 5, lines 13-19 and cols. 6-7, lines 45-5).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Kato in the invention of Niitsuma et al. in order to provide a keyboard structure that is less expensive, light weighted and easy to manufacture (Kato, col. 1, lines 40-59).

5. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niitsuma in view of Kimura and Kato, as applied to claim 1 above, and further in view of Johnson (U.S. Pat. No. 3979568).

The combination of Niitsuma, Kimura and Kato teaches the keyboard that includes the subject matter discussed above. It does not mention explicitly: the bottom pad further includes escape prevention jaws formed along extended portions of the bottom pad in a longitudinal direction to have a relatively narrow width and long length; the top pad further includes a first engaging jaw formed by upward bending and horizontally extending a first end thereof; and the bottom pad further includes a second

engaging jaw formed by upward bending and horizontally extending a first end thereof to come into close contact with a bottom surface of the first combining jaw.

Johnson teaches a keyboard assembly, including: a bottom pad includes escape prevention jaws formed along extended portions of the bottom pad in a longitudinal direction to have a relatively narrow width and long length (Fig. 4B, #60B; col. 6, lines 1-35); a top pad further includes a first engaging jaw formed by upward bending and horizontally extending a first end thereof (Fig. 4B, #60A; col. 6, lines 1-35).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Johnson in the combination of Niitsuma, Kimura and Kato in order to provide an efficient and economic approach to prevent the top pad from moving away the bottom pad (Johnson, col. 6, lines 1-35).

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niitsuma in view of Kimura and Kato, as applied to claim 1 above, and further in view of Daneshvar (U.S. Pat. No. 5374018).

The combination of Niitsuma, Kimura and Kato teaches the keyboard that includes the subject matter discussed above. It does not mention explicitly: the top pad further includes a first fitting portion, which grows thicker toward an outermost end, on a second end thereof; and the bottom pad further includes a second fitting portion, which corresponds to the first fitting portion and protrudes downward in a certain thickness along a lateral direction, at a second end on a bottom surface thereof.

Daneshvar teaches an electronic keyboard, including: a top pad includes a first fitting portion, which grows thicker toward an outermost end, on a second end thereof

(Fig. 15, #1); and a bottom pad includes a second fitting portion, which corresponds to the first fitting portion and protrudes downward in a certain thickness along a lateral direction, at a second end on a bottom surface thereof (Fig. 15, #81).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Daneshvar in the combination of Niitsuma, Kimura and Kato in order to maximize the internal space in which electronic parts can be placed while minimize the shape and weight of the board (Daneshvar, col. 2, lines 31-40).

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Niitsuma (U.S. Pat. No. 6087575) in view of Kato (U.S. Pat. No. 4491702) and Novak et al. (U.S. Pat. No. 4636593).

Niitsuma et al. teach a keyboard, comprising: a top pad with a plurality of first keys and second keys integrally formed and arranged on a top surface thereof (Fig. 1, #3a, #3b); a bottom pad of which width is relatively extended and of which top surface corresponds to a bottom surface of the top pad in view of their shapes such that edges of the top and bottom pads are bonded to each other (Fig. 1, #2; col. 7, lines 48-52); and a flexible printed circuit board which is interposed between the top and bottom pads, sealed therebetween by bonding the edges of the top and bottom pads, and formed with contact portions corresponding to the keys (Fig. 8, #12; col. 12, lines 27-52).

Niitsuma et al. do not mention expressly that: first and second recesses are formed on the bottom surface of the top pad to correspond to the first and second keys

and the contact portions of the flexible printed circuit board in view of their shapes and locations, and the top and bottom pads and the keys are made from silicon rubber material and are colored with pigments and painted with inks to give predetermined colors to the pads.

Kato teaches Key-top panel and keyboard structure using the panel, including: recesses that are formed on the bottom surface of a top pad to correspond to a plurality of keys and the contact portions of a flexible printed circuit board in view of their shapes and locations (col. 5, lines 13-19 and cols. 6-7, lines 45-5).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Kato in the invention of Niitsuma et al. in order to provide a keyboard structure that is less expensive, light weighted and easy to manufacture (Kato, col. 1, lines 40-59).

Novak teaches an elastomeric membrane keypad, including: top and bottom pads and keys that are made from silicon rubber material and are colored with pigments and painted with inks to give predetermined colors to the pads (col. 3, lines 13-22).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Novak in the invention of Niitsuma et al. in order to an improved elastomeric membrane keypad that both conducts light for illuminating keys and produces a high compression seal that enhances the tactile response of the keys (Kato, col. 1, lines 35-39).

8. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niitsuma in view of Kato and Novak et al., as applied to claim 8 above, and further in view of Johnson (U.S. Pat. No. 3979568).

The combination of Niitsuma, Kato and Novak et al. teaches the keyboard that includes the subject matter discussed above. It does not mention explicitly: the bottom pad further includes escape prevention jaws formed along extended portions of the bottom pad in a longitudinal direction to have a relatively narrow width and long length; the top pad further includes a first engaging jaw formed by upward bending and horizontally extending a first end thereof; and the bottom pad further includes a second engaging jaw formed by upward bending and horizontally extending a first end thereof to come into close contact with a bottom surface of the first combining jaw.

Johnson teaches a keyboard assembly, including: a bottom pad includes escape prevention jaws formed along extended portions of the bottom pad in a longitudinal direction to have a relatively narrow width and long length (Fig. 4B, #60B; col. 6, lines 1-35); a top pad further includes a first engaging jaw formed by upward bending and horizontally extending a first end thereof (Fig. 4B, #60A; col. 6, lines 1-35).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Johnson in the combination of Niitsuma, Kato and Novak et al. in order to provide an efficient and economic approach to prevent the top pad from moving away the bottom pad (Johnson, col. 6, lines 1-35).

9. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niitsuma in view of Kato and Novak et al., as applied to claim 8 above, and further in view of Daneshvar (U.S. Pat. No. 5374018).

The combination of Niitsuma, Kato and Novak et al. teaches the keyboard that includes the subject matter discussed above. It does not mention explicitly: the top pad further includes a first fitting portion, which grows thicker toward an outermost end, on a second end thereof; and the bottom pad further includes a second fitting portion, which corresponds to the first fitting portion and protrudes downward in a certain thickness along a lateral direction, at a second end on a bottom surface thereof.

Daneshvar teaches an electronic keyboard, including: a top pad includes a first fitting portion, which grows thicker toward an outermost end, on a second end thereof (Fig. 15, #1); and a bottom pad includes a second fitting portion, which corresponds to the first fitting portion and protrudes downward in a certain thickness along a lateral direction, at a second end on a bottom surface thereof (Fig. 15, #81).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Daneshvar in the combination of Niitsuma, Kato and Novak et al. in order to maximize the internal space in which electronic parts can be placed while minimize the shape and weight of the board (Daneshvar, col. 2, lines 31-40).

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Niitsuma in view of Kato and Novak et al., as applied to claim 8 above, and further in view of Kimura (U.S. Pat. No. 6322875).

The combination of Niitsuma, Kato and Novak et al. teaches the keyboard that includes the subject matter discussed above. It does not mention explicitly: the top and bottom pads are bonded to each other using silicon liquid rubber as an adhesive.

Kimura teaches a method of manufacturing a key cap, wherein top and bottom pads are bonded to each other using silicon liquid rubber as an adhesive (col. 2, lines 37-42).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Kimura in the combination of Niitsuma, Kato and Novak et al. in order to provide an effective and economic approach to attach the top pad to the base of the keyboard taught by the combination (Kimura, col. 2, lines 37-42).

Allowable Subject Matter

11. Claims 5 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Reasons for Allowance

12. The following is an examiner's statement of reasons for allowance:

The primary reason for the allowance of claims 5 and 11 is the inclusion of the limitation that the bottom pad further includes a second engaging jaw formed by upward

bending and horizontally extending a first end thereof to come into close contact with a bottom surface of the first combining jaw. It is this limitation found in each of each of the claims, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jianchun Qin whose telephone number is (571) 272-5981. The examiner can normally be reached on 8am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on (571) 272-2107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

KIMBERLY LOCKETT
PRIMARY EXAMINER

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jianchun Qin
Examiner
Art Unit 2837

JQ JQ
July 12, 2005